

# MDX-100/100RDS

## SONY<sup>®</sup> SERVICE MANUAL

*US Model*  
*Canadian Model*  
*E Model*  
*MDX-100*  
*AEP Model*  
*UK Model*  
*MDX-100RDS*

## SUPPLEMENT-2

File this supplement-2 with the service manual and supplement-1.

**Subject: PRINTED BOARDS MODIFICATION (-13)**

- **MINI DISC SECTION ELECTRICAL ADJUSTMENTS**
- **PRINTED WIRING BOARDS**
- **SCHEMATIC DIAGRAM**
- **BLOCK DIAGRAM**
- **ELECTRICAL PARTS LIST**

### **Note:**

- The item MINI DISC SECTION ELECTRICAL ADJUSTMENTS contains all of them for the boards with the suffix -13 of parts number.

For the TUNER SECTION ELECTRICAL ADJUSTMENTS and the MINI DISC SECTION ELECTRICAL ADJUSTMENTS for the boards with the suffix -12 of parts number, please refer to the SUPPLEMENT-1.

- The item PRINTED WIRING BOARDS contains all of the boards with the suffix -13 of parts number.

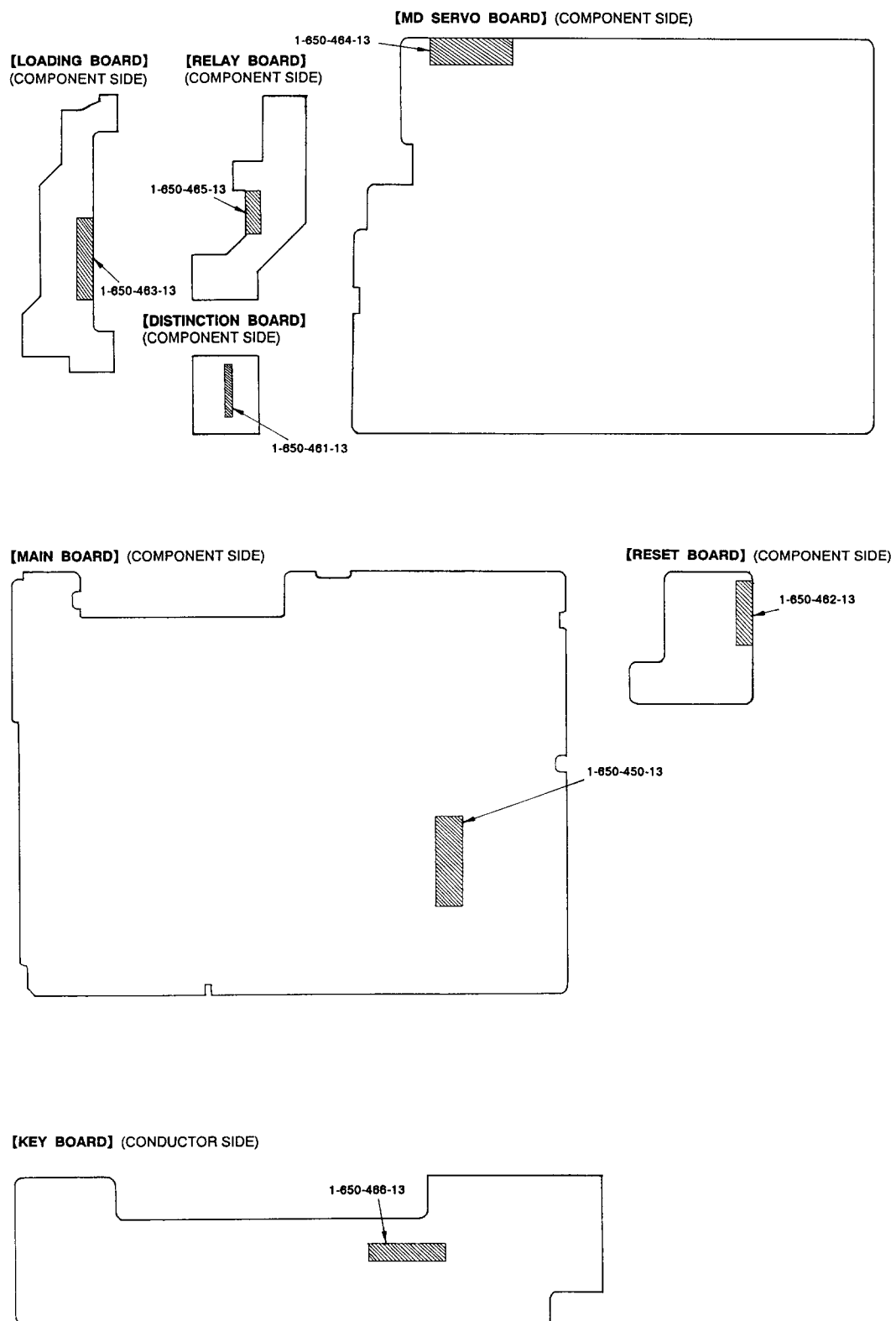
The schematic diagrams, the block diagrams and the electrical parts list are correspond with them.

For the boards with the suffix -12 of parts number, please refer to the service manual.

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## 1. DISCRIMINATION



## 2. ELECTRICAL ADJUSTMENTS

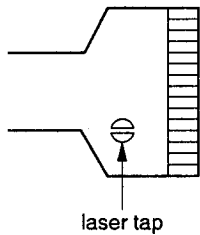
### MINI DISC SECTION

#### 2-1. Precaution in the Confirmation of Laser Diode Radiation

Do not look in from the top in confirming the radiation of Laser Diode for fear of the loss of eyesight.

#### 2-2. Precaution in the Handling of Mini-Disc Device (KMS-150A)

Solder-bridge the laser tap of flexible board in handling the Laser Diode in the optical pick-up since it is very easy to be destroyed in the static electricity. Be fully prepared for the prevention of electrostatic destruction. Be careful in handling the flexible board since it is easy to be cut.



Optical Pick-Up Flexible Board

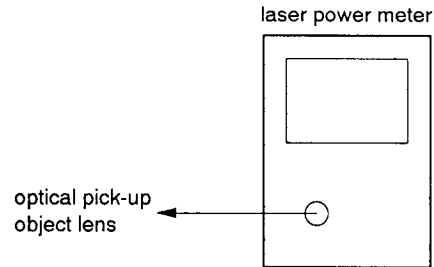
#### 2-3. Precaution in the Adjustment

- 1) All the adjustment should be performed in order of the Test Mode. Cancel the Test Mode by pressing [OFF] button after the adjustment.
- 2) In some cases, SLED shift by [◀◀ - MANU/DISC + ▶▶] button or EJECT movement by [EJECT] button do not work. In those cases, cancel the Test Mode by pressing [OFF] button and reset the Test Mode.
- 3) Instrument and measure are shown below.
  - CD Test Disc TDYS-1 (Parts Code: 4-963-646-01)
  - Recorded MO Disc PTDM-1 (Parts Code: J-2501-054-A)
  - Laser Power Meter LPM-8001 (Parts Code: J-2501-046-A)
  - Oscilloscope (Band over 40 MHz. Measure after performing CAL of probe.)
  - Digital Voltmeter

#### 2-4. Laser Power Adjustment

- 1) Adjustment by Laser Power Meter

Connection:

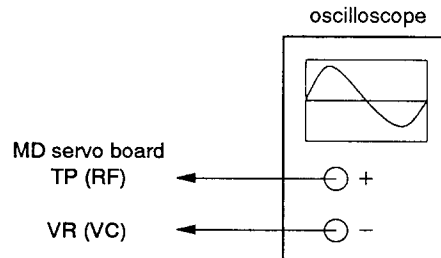


Procedure:

1. Turn RV529 fully counterclockwise.
2. Set it Servo Adjustment Mode of the Test Mode.
3. Adjust the position of the optical pick-up with [◀◀ - MANU/DISC + ▶▶] and set the Laser Power Meter on the object lens of the optical pick-up.
4. Press [3] button.
5. Adjust RV529 so that the Laser Power Meter shows  $820 \pm 5 \mu W$ .
6. Press [4] button.

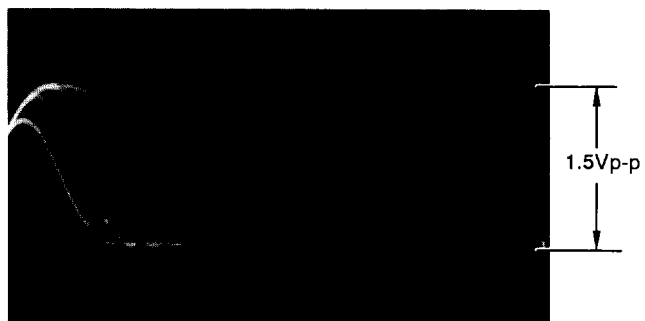
- 2) Adjustment by an eye pattern.

Connection:



Procedure:

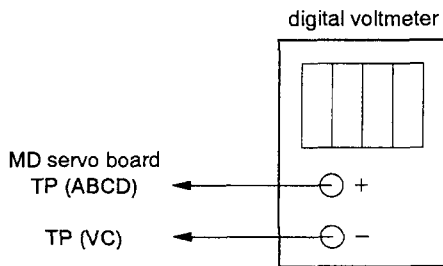
1. Turn RV529 fully counterclockwise.
2. Load and play back the CD Test Disc.
3. Adjust RV529 for an eye pattern of 1.5 Vp-p.



500mV/DIV  
0.5  $\mu$ sec/DIV

## 2-5. FOK Offset Adjustment

Connection:

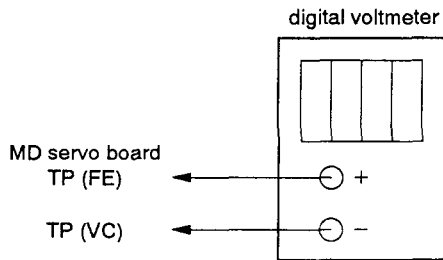


Procedure:

1. Connect a Digital Voltmeter between TP (ABCD) and TP (VC) of MD servo board.
2. Set it Servo Adjustment Mode of the Test Mode.
3. Press **[3]** button.
4. Adjust RV510 for  $-200 \pm 50$  mV on the voltmeter.
5. Press **[4]** button.

## 2-6. Premastered Focus Bias Adjustment

Connection:

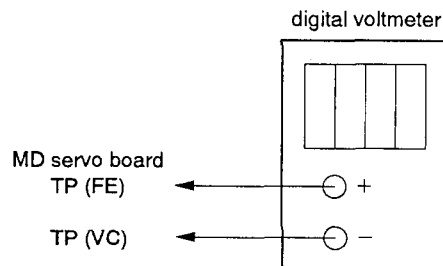


Procedure:

1. Connect a Digital Voltmeter between TP (FE) and TP (VC) of MD servo board.
2. Set it Servo Adjustment Mode of the Test Mode.
3. Press **[3]** button, then **[4]** button.
4. Adjust RV518 for  $0 \pm 10$  mV on the voltmeter.
5. Press **[4]** button.

## 2-7. MO Focus Bias Adjustment

Connection:

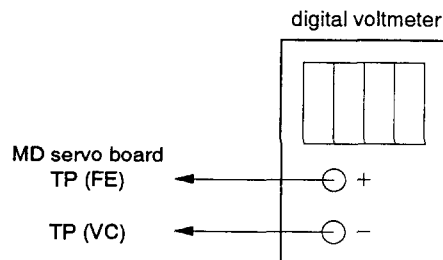


Procedure:

1. Connect a Digital Voltmeter between TP (FE) and TP (VC) of MD servo board.
2. Set it Servo Adjustment Mode of the Test Mode.
3. Press **[3]** button.
4. Adjust RV517 for  $-300 \pm 10$  mV on the voltmeter.
5. Press **[4]** button.

## 2-8. Premastered E-F Balance Adjustment

Connection:

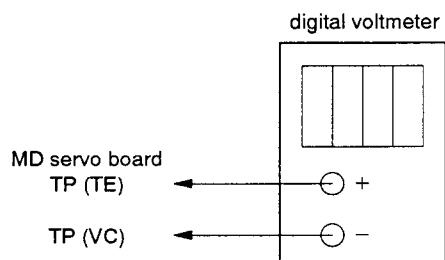


Procedure:

1. Connect a Digital Voltmeter between TP (FE) and TP (VC) of MD servo board.
2. Set it Servo Adjustment Mode of the Test Mode.
3. Move the optical pick-up to the most inside by keeping pressing **[<<]** button.
4. Press **[>>]** button once. (The SLED moves 1 step to the outer circumference.)
5. Load an CD disc.
6. Press **[1]** button for focus on.
7. Adjust RV527 for  $0 \pm 100$  mV on the voltmeter.
8. Press **[4]** button.
9. Press **[EJECT]** button to eject the disc.

## 2-9. MO E-F Balance Adjustment

### Connection:

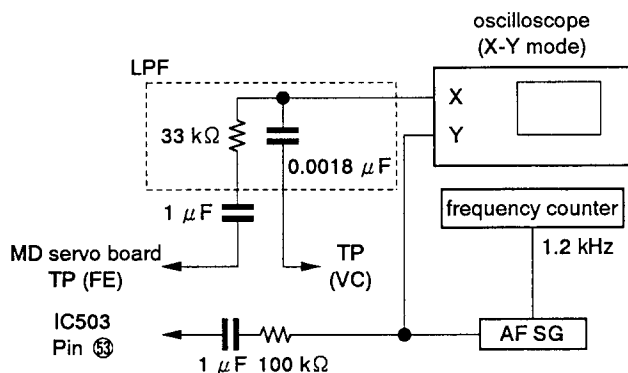


### Procedure:

1. Connect the Digital Voltmeter between TP (TE) and TP (VC) of MD servo board.
2. Set it Servo Adjustment Mode of the Test Mode.
3. Move the optical pick-up to the most inside by keeping pressing  $\leftarrow$  button.
4. Press  $\rightarrow$  button once. (The SLED moves 1 step to the outer circumference.)
5. Load an MO disc.
6. Press  $\boxed{1}$  button for focus on.
7. Adjust RV528 for  $0 \pm 100$  mV on the voltmeter.
8. Press  $\boxed{4}$  button.
9. Press  $\triangle$  button to eject the disc.

## 2-10. Focus Gain Adjustment

### Connection:



### Procedure:

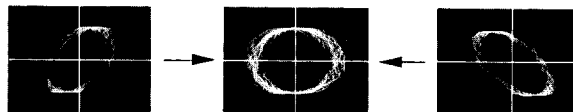
1. Connect as shown above.
2. Set it Servo Adjustment Mode of the Test Mode.
3. Move the optical pick-up to the most inside by keeping pressing  $\leftarrow$  button.
4. Press  $\rightarrow$  button once. (The SLED moves 1 step to the outer circumference.)
5. Load an MO disc.
6. Press  $\boxed{1}$  button for focus on.
7. Press  $\boxed{2}$  button for tracking.
8. Adjust RV543 so that the waveform observed on the oscilloscope is symmetrical to the vertical line at the center, as shown in figure (b).
9. Press  $\boxed{4}$  button.

10. Press  $\triangle$  button to eject the disc.

**Note:** The level of ch. 1 (X) and ch. 2 (Y) are different by 10 times. Adjust the range of the oscilloscope so that observation is done in the same level.

(Lissajous Waveform)

Range: ch. 1 (X) = 20 mV  
ch. 2 (Y) = 200 mV

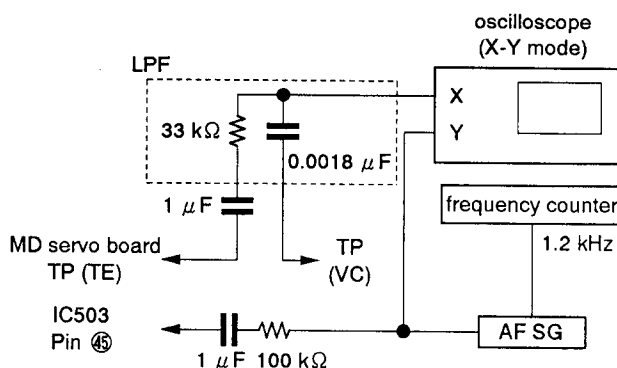


(a) Gain is too low. (b) Gain is appropriate. (c) Gain is too high.

## 2-11. Tracking Gain Adjustment

- 1) Method by the Lissajous Waveform.

### Connection:



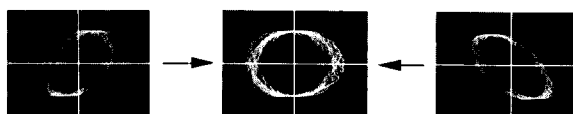
### Procedure:

1. Connect as shown above.
2. Set it Servo Adjustment Mode of the Test Mode.
3. Move the optical pick-up to the most inside by keeping pressing  $\leftarrow$  button.
4. Press  $\rightarrow$  button once. (The SLED moves 1 step to the outer circumference.)
5. Load an MO disc.
6. Press  $\boxed{1}$  button for focus on.
7. Press  $\boxed{2}$  button for tracking.
8. Adjust RV542 so that the Lissajous Waveform on the oscilloscope is circle.
9. Press  $\boxed{4}$  button.
10. Press  $\triangle$  button to eject the disc.

**Note:** 1. The level of ch. 1 (X) and ch. 2 (Y) are different by 10 times. Adjust the range of the oscilloscope so that observation is done in the same level.  
2. In case that the Lissajous Waveform is not confirmed with the method shown above, perform with the summary adjustment method.

(Lissajous Waveform)

Range: ch. 1 (X) = 20 mV  
ch. 2 (Y) = 200 mV



(a) Gain is too low. (b) Gain is appropriate. (c) Gain is too high.